

What is claimed is:

1. A catalytic converter device for cleansing exhaust gas emitted from an internal combustion engine, comprising:

an elongated body having a longitudinal axis;

an inlet area located at one end of the elongated body, wherein the exhaust gas enters the elongated body in the inlet area; and

a sleeve extending from the inlet area, wherein the sleeve has a catalytic material formed thereon, wherein the sleeve has an active surface for reacting with the exhaust gas, wherein a size of the active surface increases as a distance from the inlet area increases, wherein the sleeve includes at least one depression formed therein, wherein the sleeve without the at least one depression has a first internal cross section, wherein the sleeve having the at least one depression has a second internal cross section, wherein the second internal cross section is smaller than said first internal cross section, wherein the depression has a depth that increases as the distance from the inlet area increases.

2. The catalytic converter device according to claim 1, wherein the sleeve has a plurality of openings formed therein.

3. The catalytic converter device according to claim 2, wherein said plurality of openings extend across the active surface.

4. The catalytic converter device according to claim 1, wherein each of the at least one depression extends in a direction substantially parallel to the longitudinal axis.

5. The catalytic converter device according to claim 1, wherein the sleeve includes a plurality of depressions arranged at regular intervals around the sleeve.

6. The catalytic converter device according to claim 1, wherein at an end of the sleeve opposite the inlet area:

the active surface has a perimeter in a plane that is perpendicular to the longitudinal axis,

an internal cross-sectional area of the sleeve in a plane that is perpendicular to the longitudinal axis is at least about 5 % smaller than an area of a circle having an equally long perimeter, and

the circle has a diameter that is larger than a width of the sleeve.

7. The catalytic converter device according to claim 1, wherein the sleeve has an opening formed in an end of the sleeve opposite the inlet area, wherein the catalytic converter device further comprising:

a cover plate covering the opening.

8. An exhaust system for an internal combustion engine, comprising:

a flow path for exhaust gas emitted from the internal combustion engine;

a primary catalytic converter device for cleansing the exhaust gas, wherein the primary catalytic converter device being arranged within the flow path; and

a preliminary catalytic converter device for cleansing the exhaust gas, wherein the preliminary catalytic converter being arranged within the flow path upstream from the primary catalytic converter such that the exhaust gas emitted from the internal combustion engine travels through the preliminary catalytic converter device before traveling to the primary catalytic converter device, wherein the preliminary catalytic converter device comprising

an elongated body having a longitudinal axis,

an inlet area located at one end of the elongated body, wherein the exhaust gas enters the elongated body in the inlet area, and

a sleeve extending from the inlet area, wherein the sleeve has a catalytic material formed thereon, wherein the sleeve has an active surface for reacting with the exhaust gas, wherein a size of the active surface increases as a distance from the inlet area increases, wherein the sleeve includes at least one depression formed therein, wherein the sleeve without the at least one depression has a first internal cross section, wherein the sleeve having the at least one depression has a second internal cross section, wherein the second internal cross section is smaller than said first internal cross section, wherein the depression has a depth that increases as the distance from the inlet area increases.

9. The exhaust system according to claim 8, further comprising:

a muffler, wherein the preliminary catalytic device being arranged at least partially within the muffler.

10. The exhaust system according to claim 8, wherein the sleeve has a plurality of openings formed therein.

11. The exhaust system device according to claim 10, wherein said plurality of openings extend across the active surface.

12. The exhaust system according to claim 8, wherein the second internal cross section changes as the distance from the inlet area increases.

13. The exhaust system according to claim 8, wherein each of the at least one depression extends in a direction substantially parallel to the longitudinal axis.

14. The exhaust system according to claim 8, wherein the sleeve includes a plurality of depressions arranged at regular intervals around the sleeve.

15. The exhaust system according to claim 8, wherein the sleeve has an opening formed in an end of the sleeve opposite the inlet area, wherein the catalytic converter device further comprising:

a cover plate covering the opening

16. The catalytic converter device according to claim 8, wherein at an end of the sleeve opposite the inlet area:

the active surface has a perimeter in a plane that is perpendicular to the longitudinal axis,

an internal cross-sectional area of the sleeve in a plane that is perpendicular to the longitudinal axis is at least about 5 % smaller than an area of a circle having an equally long perimeter, and

the circle has a diameter that is larger than a width of the sleeve.

17. A catalytic converter device for cleansing exhaust gas emitted from an internal combustion engine, comprising:

an elongated body having a longitudinal axis;

an inlet area located at one end of the elongated body, wherein the exhaust gas enters the elongated body in the inlet area; and

a sleeve extending from the inlet area and having an inner surface that is at least partially coated with a catalytic material that defines an active surface for reacting with the exhaust gas, wherein a perimeter of the active surface in a plane that is perpendicular to the longitudinal axis increases as the sleeve extends away from the inlet area, wherein an internal cross-sectional area of the sleeve in at least one plane that is perpendicular to the longitudinal axis is at least about 5% smaller than an area of a circle having a perimeter equal to the perimeter of the active surface in the at least one plane.

18. The exhaust system according to claim 17, wherein at an end of the sleeve opposite the inlet area, the circle has a diameter that is larger than a width of the sleeve.

19. The exhaust system according to claim 17, wherein the perimeter of the active surface is non-circular at a longitudinal position where the perimeter increases as the sleeve extends away from the inlet area.

20. The exhaust system according to claim 17, wherein a cross-sectional shape of the active surface varies as the sleeve extends away from the inlet area.